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Preliminary results of a cooperative bird-banding project in the Zapata Swamp, Cuba, January 1988

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Introduction

A cooperative bird-banding project involving Cuban, Canadian, and U.S. ornithologists was carried out between 12 and 20 January 1988 in a forested sector of the Zapata Swamp in western Cuba. It was the first bird-banding program involving international cooperation to take place in Cuba since 1959. Except for some White-crowned Pigeons *Columba leucocephala* banded between 1979 and 1983—a study not yet published (EG, pers. commun.)—relatively few birds have been banded in Cuba in the past (Garrido 1986).

The program's main objectives were to train Cuban wildlife biologists in mist-netting and bird-banding techniques, to initiate a study of wintering and staging Nearctic species, to identify sites where banding stations could be established, and to enhance the flow of information between Cuban, Canadian, and U.S. ornithologists.

Because of its size—approximately half of the West Indies' terrestrial habitats (Lucas *et al.* 1983)—and its geographic location—a bridge at the interface of the Nearctic and Neotropical realms (Udvardy 1975)—the Cuban archipelago likely provides wintering and staging habitats important to many North American migrant bird species. Despite a growing network of protected areas and the development of conservation policies (S. Oharriz LLorente, pers. commun.), and although one quarter of the main island is mountainous (Garrido 1986), is difficult to access, and has poor agricultural value (Herrero *et al.* 1983), ranching, logging, and agriculture—particularly the cultivation of sugar cane—have contributed greatly to deforestation and forest fragmentation in the last century (Silva Taboada 1983; Herrero *et al.* 1983). In 1959, forests were estimated to occupy no more than 12% of the Cuban landmass (Herrero *et al.* 1983). Accordingly, forest ecosystems are probably as degraded in Cuba as they are in North America (Klein and Perkins 1987; Bakersville 1988), the Caribbean Basin (Lewis and Coffey 1985; Eyre 1987), and other Latin American countries (Lovejoy 1983; Hutto 1986; Johns 1988; Malingreau and Tucker 1988). We suspect that this degradation has impacts on migratory birds that are similar to those recorded elsewhere in the hemisphere (Keast and Morton 1980; Robbins *et al.* 1986; Lynch 1989).

Study area

A banding station was established at Los Sábalos (22°15'N, 81°05'W), on the Zapata Peninsula, Matanzas Province (Fig. 1). The peninsula encompasses over 3400 km² of freshwater, brackish, and marine wetlands (Scott and Carbonell 1986). Mangrove dominates vast areas at sea level, whereas freshwater marshes, shrub swamps, and forested wetlands prevail inland. The area is flooded in the rainy season (May–October). During the dry season, the forest floor remains wet where there is a canopy. The elevation never exceeds a few metres. Few people live in the peninsula because of the wet terrain. The climate is tropical, with mean daily temperatures ranging from 20°C in January to 27°C in July (Alfonso *et al.* 1985).

The prevailing vegetation consists primarily of upland semideciduous forest growing on shallow soil over limestone (Capote and Benazain 1984). The oxhorn bucida *Bucida buceras* (Combretaceae) is the most common tree species. Tree heights range from 5 to 20 m, and the canopy covers 30–80% of the forest floor. The area has been logged in the past. Grazing by sheep, horses, feral pigs, and white-tailed deer occurred near the mist-nets.

Methods and materials

Thirty mist-nets (2 m x 9 m x 3 cm mesh) were distributed equally among three substations. Substations A and B were in a relatively dense and humid forest. Substation C was in a dry clearing where the nets were strung at the interface of the clearing and the forest. Shrubs and herbaceous plants prevailed in the clearing. Birds were captured, identified, measured, weighed, and, when possible, sexed and aged. As authorized by the Bird Banding Office of the Canadian Wildlife Service, both migratory and resident species were banded with standard U.S. Fish and Wildlife Service butt-ends aluminum bands. The mist-nets were open during nine days, between sunrise and sunset, up to 10 hours per day, for a total of 1662 net-hours. In addition, 17 fixed-radius bird counts (Hutto *et al.* 1986) were made in the vicinity of the nets. All bird species observed at random were also recorded. A profile of the vegetation was drawn at each substation; it included the identification of the dominant plant species, their height, tree diameter at breast height, and estimations of woody plant cover, canopy cover, and herbaceous plant cover.

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Figure 1
Location of the Los Sábalos Banding Station, Cuba

Results and discussion

Two hundred and thirty-eight birds of 38 species were captured. Forty-nine birds were recaptured one to four times, for a total of 74 repeats. A total of 312 encounters was therefore recorded at Los Sábalos between 12 and 20 January. Sixteen Nearctic species, including 134 individuals, were captured, as well as 104 individuals of 23 resident species (Table 1). Twenty-five species of Passeriformes, four species of Columbiformes, three species of Piciformes, and two species of Cuculiformes were captured, as well as one species from each of the following orders: Apodiformes, Coraciiformes, Strigiformes, and Trogoniformes.

All Nearctic species caught were Parulinae, except Yellow-bellied Sapsucker *Sphyrapicus varius*, Gray Catbird *Dumetella carolinensis*, and Blue-gray Gnatcatcher *Polioptila caerulea*. Many of these species occur widely in Canada—where many subspecies occur—except for four species (Hooded Warbler *Wilsonia citrina*, Worm-eating Warbler *Helmitheros vermivorus*, Kentucky Warbler *Oporornis formosus*, and Louisiana Waterthrush *Seiurus motacilla*) that are uncommon or rare in Canada but more widespread in the eastern United States (American Ornithologists' Union 1983; Godfrey 1986; Cadman *et al.* 1987). Although several subspecies of Nearctic species are known to stage or winter in Cuba (Garrido and García Montaña 1975), no attempt was made to identify them. Status as winter resident or as spring or fall migrant appears unclear for many of these subspecies.

The relative abundance of the Nearctic species varied widely. Six of the 16 species—Palm Warbler *Dendroica palmarum*, Common Yellowthroat *Geothlypis trichas*, Ovenbird *Seiurus aurocapillus*, Gray Catbird, American Redstart *Setophaga ruticilla*, and Black-throated Blue Warbler *Dendroica caerulescens*—accounted for over 70% of the captures. The abundance of the Palm Warbler was especially noteworthy: it is the most common wintering warbler in Cuba, hence its Cuban name Bijirita Común, or Common Warbler (Garrido and García Montaña 1975) (scientific, English, and Cuban-Spanish names are tabulated in Appendix 1). The relative abundance of all species must be seen in light of the bias of our sampling technique, which favoured the capture of small species foraging close to the ground.

Twenty-two resident species were captured. Most are common in the Caribbean Basin, and at least six are endemic Cuban species: Yellow-headed Warbler *Teretistris fernandinae*, Cuban Grassquit *Tiaris canora*, Cuban Tody *Todus multicolor*, Cuban Pygmy-Owl *Glaucidium siju*, Cuban Vireo *Vireo gundlachii*, and Cuban Trogon *Priotelus temnurus*. Seven additional species were Cuban endemic subspecies: Gray-headed Quail-Dove *Geotrygon caniceps caniceps*, Cuban Bullfinch *Melopyrrha nigra nigra*, Great Lizard Cuckoo *Saurothera merlini merlini*, Cuban Emerald *Chlorostilbon ricordii ricordii*, Greater Antillean Pewee *Contopus caribaeus caribaeus*, West-Indian Red-bellied Woodpecker *Melanerpes superciliaris superciliaris*, and Northern Flicker *Colaptes auratus chrysocaulosus* (Garrido and García Montaña 1975; Bond 1985; García 1987). All resident species captured were apparently common at Los Sábalos. Cuban Pygmy-Owls were usually caught when they attempted to prey on entrapped birds; attacks generally caused the death of the intended prey. All Cuban Emeralds were released because we did not want to band hummingbirds.

Thirty-six birds of 11 Nearctic species were recaptured at least once during the study period, 15 of which were retrapped two, three, or four times (Table 2). Although these data represent only a week of the winter residency of these Nearctic species, they suggest that, once in a wintering area, these birds tend to remain localized. Furthermore, only two of these recaptured birds (Hooded Warbler and American Redstart) were caught away from the substation at which they were banded. However, both were subsequently caught again at the original banding site, indicating that their foraging range encompassed the 125 m between substations. These limited findings are consistent with studies showing high winter site tenacity and even winter territoriality in Nearctic breeding warblers wintering in the Neotropics (Stewart and Connor 1980; Lynch *et al.* 1985; Morton *et al.* 1987; Holmes *et al.* 1989). If further research documents this phenomenon in several species throughout the winter, it will provide additional incentive to determine the significance of the Cuban archipelago to Nearctic migrants.

All recaptures but one were of Parulinae, a group for which marked declines in several species have been suggested by banding data in North America (Stewart 1987, 1988); these suggestions require further documentation (Jones 1986; Gilbert 1988; Stewart 1988). North American Breeding Bird Survey data also suggest that most wood warbler populations were stable or increasing before the 1980s (Robbins *et al.* 1986).

Table 1
Bird species captured at Los Sábalos, 12–20 January 1988

Nearctic migrants	Banded	Others[a]	Total	Resident species	Banded	Others[a]	Total
Palm Warbler	23		23	Red-legged Thrush	12		12
Common Yellowthroat	16	1	17	Loggerhead Kingbird	9		9
Ovenbird	16	2	18	Gray-headed Quail-Dove	9		9
Gray Catbird	14		14	Common Ground-Dove	8		8
American Redstart	12		12	Yellow-headed Warbler	7		7
Black-throated Blue Warbler	10	1	11	Ruddy Quail-Dove	6	1	7
Worm-eating Warbler	8		8	Cuban Bullfinch	6		6
Northern Parula	6	1	7	La Sagra's Flycatcher	6		6
Northern Waterthrush	6		6	Cuban Grassquit	5		5
Black-and-white Warbler	5	1	6	Cuban Pygmy-Owl	5		5
Louisiana Waterthrush	3		3	Cuban Tody	4		4
Yellow-bellied Sapsucker	3		3	Cuban Vireo	4		4
Magnolia Warbler	2		2	Great Lizard Cuckoo	3	1	4
Blue-gray Gnatcatcher	1	1	2	Greater Antillean Pewee	3		3
Kentucky Warbler	1		1	Yellow-faced Grassquit	2		2
Hooded Warbler	1		1	Black-cowled Oriole	2		2
				Smooth-billed Ani	2		2
				Cuban Trogon	2		2
				West-Indian Red-bellied Woodpecker	2		2
				Zenaida Dove	1		1
				Northern Flicker	1		1
				Cuban Emerald		3	3
Total	127	7	134	Total	99	5	104

[a] Birds escaped, were released, or died.

Thus, their apparent tendency to remain localized during the winter may encourage the preservation of sufficient winter habitat to maintain the populations of Nearctic–Neotropical migrant warblers.

In addition to Nearctic migrants, 13 birds of eight resident species were recaptured once or twice (Table 2). Duration of both site tenacity and territoriality in most resident species has yet to be studied in detail and deserves extensive investigation. As with migratory species, the conservation of resident species likely depends on viable forest ecosystems.

Fifty-eight species were observed at random at the banding station, 49 of which were recorded in fixed-radius circular plots (Appendix 1). Fifteen of the species observed in fixed-radius point counts were never captured in the mist-nets; most were observed only once or a few times (Table 3). The behaviour, size, or preferred habitats of these species were such that capture was extremely unlikely. As the mist-nets were strung from the ground to a height of approximately 2 m, species living in or above the canopy were not caught. An unknown number of birds and species hit the nets without getting trapped. We suspect that larger species, such as thrushes, cuckoos, and ground-doves, often escaped from the mist-nets. The mesh used —3 cm—is apparently not optimal for capturing larger species. Although mist-nets appear to be less appropriate and less efficient than point counts for surveys of forest bird communities (Lynch 1989), they remain an excellent tool for Cubans to learn rapidly about migratory species, and for North Americans to learn about Cuban resident species.

Species listed in Table 3 were seen in the forest canopy or flying above the trees. Waders and other water birds were common nearby because of the presence of wetlands, particularly mangrove. It was not possible to determine whether many of these species were resident or migratory subspecies. At least six species could have been either: Mourning Dove *Zenaida macroura*, American Coot *Fulica americana*, Olivaceous Cormorant *Phalacrocorax olivaceus*, Great Blue Heron *Ardea herodias*, Green-backed Heron *Butorides striatus*, and Killdeer *Charadrius vociferus* (Garrido and García Montaña 1975).

Four species—Worm-eating Warbler, Kentucky Warbler, Hooded Warbler, and Pine Warbler *Dendroica pinus*—that were captured or observed at Los Sábalos were of particular interest, because our records add a new dimension to their status, as given in Garrido and García Montaña (1975). Eight Worm-eating Warblers were banded and small numbers were seen regularly between 12 and 18 January. They were previously known as "fairly rare in winter." This was definitely not the case at Los Sábalos in 1988. A female Kentucky Warbler was banded on 15 January. This species is considered a rare autumn and spring transient. Our record suggests that it may winter at Los Sábalos. A female Hooded Warbler, banded on 13 January, was recaptured on 14 and 20 January. We also observed this species on three occasions near Los Sábalos. It is known as a rare autumn and spring transient and a rare winter resident in eastern Cuba. Our records definitely suggest that it also winters in western Cuba. Finally, a Pine Warbler was observed at Los Sábalos on 17 January (RDM, pers. obs.). This

Table 2
Bird species recaptured at Los Sábalos, 12–20 January 1988

Nearctic migrants							Cuban residents						
			No. of recaptures							No. of recaptures			
Species	Total	%[a]	1	2	3	4	Species	Total	%[a]	1	2	3	4
Palm Warbler	9	39	8	1			Red-legged Thrush	4	33	2	2		
American Redstart	5	41	3	1		1	Loggerhead Kingbird	3	33	2	1		
Ovenbird	4	25	2	2			Yellow-headed Warbler	1	14		1		
Common Yellowthroat	4	25	1	2	1		Cuban Tody	1	25	1			
Black-throated Blue Warbler	3	30	1		2		La Sagra's Flycatcher	1	17	1			
Northern Waterthrush	3	50	2	1			Cuban Grassquit	1	20	1			
Gray Catbird	3	21	2	1			Great Lizard Cuckoo	1	33		1		
Magnolia Warbler	2	100		2			Common Ground-Dove	1	13	1			
Black-and-white Warbler	1	20	1										
Hooded Warbler	1	100		1									
Louisiana Waterthrush	1	33	1										
Total	36	28	21	11	3	1	Total	13	13	8	5		

Note: Only the first recapture was considered when birds were retrapped more than once per day.
[a] Percentage of individuals banded that were recaptured.

species is considered an accidental transient, but previous records were from Havana Province only. There is apparently no winter record for this species (Garrido 1988). Further mist-netting should help clarify the status of many migratory species that are difficult to observe.

The mist-nets were distributed among three substations. The relative abundance of each captured species appeared to be related to the habitat characteristics at each substation. Substations A and B were in a relatively dense and humid forest, whereas substation C was in a dry clearing. American Redstarts, Black-throated Blue Warblers, and Yellow-headed Warblers were captured primarily at substations A and B, whereas Palm Warblers, Common Yellowthroats, and Common Ground-Doves *Columbina passerina* were captured mainly at substation C. Despite a lower mist-netting effort (Table 4), more individuals (42% of all captures) and species (31) were trapped at substation C than at substation B (37%, 27 species) or substation A (21%, 27 species). This was likely caused by a greater habitat diversity at substation C and the fact that the upper height of the vegetation there approximated the height of the nets. The differences between substations A and B may have resulted from greater vegetation cover at substation B. Interestingly, Ovenbirds, Northern Waterthrushes *Seiurus noveboracensis*, and Gray Catbirds were caught regularly at all substations. Obviously, some species are less selective than others with respect to their wintering habitat.

Conclusion

Despite its preliminary nature, this pilot project has yielded many concrete results, and its objectives have been largely met. Nine Cubans from four different organizations have been trained in bird-banding and mist-netting techniques. By the end of the session, all participants could service the mist-nets and band birds on their own, and most could identify most bird species, including Nearctic species, without help. However, it was recognized that further training was necessary and that such training might be more fruitful during migration, when the volume of captures and the number of species are likely to be higher. Additional field techniques—such as point counts—should also be mastered, as mist-netting alone is not a comprehensive sampling technique.

This preliminary study clearly indicates that substantial numbers of Nearctic birds and species occur in Cuba during the winter. We also suspect that a large fraction of the Nearctic birds that migrate through the Caribbean Basin stage in Cuba during fall and spring migrations. Accordingly, in light of the apparent decline of many migratory bird species in the hemisphere, we hope that many questions regarding the significance of Cuba to Nearctic species, both winter residents and spring and fall migrants, will be answered in the future. The following

Table 3
Bird species observed in fixed-radius point counts but not captured at Los Sábalos, 12–20 January 1988

Species	Abundance[a]
Cuban Parrot	1.62
Mourning Dove	0.70
Cuban Blackbird	0.65
White-crowned Pigeon	0.35
American Coot	0.18
Cuban Green Woodpecker	0.18
Olivaceous Cormorant	0.06
Great Blue Heron	0.06
Little Blue Heron	0.06
Cattle Egret	0.06
Green-backed Heron	0.06
Wood Stork	0.06
Turkey Vulture	0.06
American Kestrel	0.06
Killdeer	0.06

[a] Abundance is expressed as the mean number recorded on 17 fixed-radius counts near the mist-nets.

Table 4
Mist-netting effort and capture rates at substations A, B, and C, Los Sábalos, 12–20 January 1988

Parameter	A	B	C	Total
Birds banded	52	76	98	226
Recaptures	10	32	32	74
Others	4	6	2	12
Total	66	114	132	312
Number of species	27	27	31	38
Mist-netting effort (net-hours)	615	600	447	1662
Capture rate (birds/net-hour)	0.11	0.19	0.30	0.19

topics are among those that deserve consideration: the relative importance of eastern and western Cuba as flyways; the relative importance of coastal lowland and interior highland forests; the importance of the Zapata Swamp, one of the largest wetlands in the Caribbean Basin; interactions with Cuban resident species; which species and subspecies depend the most on Cuban ecosystems; the relative importance of old-growth, secondary, and degraded forests, and other habitats (e.g., the numerous offshore cays); and the impact of agricultural and forest management practices. The impact of forest degradation certainly stands out as a topic of immediate concern. However, before any valid cooperative program can be developed, specific research priorities and objectives need to be clearly identified.

This preliminary project also indicates that the Zapata Swamp, including Los Sábalos, constitutes an excellent area for initiating and developing such a study on the impacts of forest degradation. It harbours thousands of hectares of diverse habitats, both used and unused by man, and at different levels of degradation. Additional study areas remain to be identified.

Finally, we hope that the imminent signature of an agreement of cooperation between the Canadian Wildlife Service, Long Point Bird Observatory, and the Cuban Institute of Ecology and Systematics, and the issuance of a Master Permit by the Bird Banding Office of the Canadian Wildlife Service to the Institute's Migratory Bird Laboratory, will constitute viable channels of communication that will enhance the flow of information between Cuban and Canadian wildlife biologists.

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Appendix 1
Scientific, English, and Cuban-Spanish names of all bird species recorded at Los Sábalos, 12–20 January 1988 (C = captured; R = recorded in circular plots; O = observed at random near mist-nets)

Code	Scientific name	English name [a]	Cuban-Spanish name [b]
R	*Phalacrocorax olivaceus*	Olivaceous Cormorant	Corúa de Agua Dulce
R	*Ardea herodias*	Great Blue Heron	Garcilote Americano
R	*Egretta caerulea*	Little Blue Heron	Garza Azul
R, O	*Bubulcus ibis*	Cattle Egret	Garcita Bueyera
R, O	*Butorides striatus*	Green-backed Heron	Aguatacaimán
R	*Mycteria americana*	Wood Stork	Cayama
R, O	*Cathartes aura*	Turkey Vulture	Aura Tiñosa
O	*Accipiter gundlachii*	Gundlach's Hawk	Gavilán Colilargo
O	*Buteo platypterus*	Broad-winged Hawk	Gavilán Bobo
O	*Buteo jamaicensis*	Red-tailed Hawk	Gavilán del Monte
O	*Polyborus plancus*	Crested Caracara	Caraira
R, O	*Falco sparverius*	American Kestrel	Cernícalo
R	*Fulica americana*	American Coot	Gallareta de Pico Blanco
R, O	*Charadrius vociferus*	Killdeer	Títere Sabanero
R, O	*Columba leucocephala*	White-crowned Pigeon	Torcaza Cabeciblanca
C, R, O	*Zenaida aurita*	Zenaida Dove	Guanaro
R, O	*Zenaida macroura*	Mourning Dove	Paloma Rabiche
C, O	*Columbina passerina*	Common Ground-Dove	Tojosa
C, R, O	*Geotrygon caniceps*	Gray-headed Quail-Dove	Camao
C, R, O	*Geotrygon montana*	Ruddy Quail-Dove	Boyero
O	*Starnoenas cyanocephala*	Blue-headed Quail-Dove	Paloma Perdiz
O	*Aratinga euops*	Cuban Parakeet	Catey
R, O	*Amazona leucocephala*	Cuban Parrot	Cotorra
C, R, O	*Saurothera merlini*	Great Lizard Cuckoo	Arriero
C, R, O	*Crotophaga ani*	Smooth-billed Ani	Judío
C, R, O	*Glaucidium siju*	Cuban Pygmy-Owl	Sijú Platanero
C, R, O	*Chlorostilbon ricordii*	Cuban Emerald	Zunzún
O	*Mellisuga helenae*	Bee Hummingbird	Pájaro Mosca
C, R, O	*Priotelus temnurus*	Cuban Trogon	Tocororo
C, R, O	*Todus multicolor*	Cuban Tody	Pedorrera
C, R, O	*Melanerpes superciliaris*	West-Indian Red-bellied Woodpecker	Carpintero Jabado
C, R, O	*Sphyrapicus varius*	Yellow-bellied Sapsucker	Carpintero de Paso
R, O	*Xiphidiopicus percussus*	Cuban Green Woodpecker	Carpintero Verde
C, R, O	*Colaptes auratus*	Northern Flicker	Carpintero Escapulario
C, R, O	*Contopus caribaeus*	Greater Antillean Pewee	Bobito Chico
C, R, O	*Myiarchus sagrae*	La Sagra's Flycatcher	Bobito Grande
C, R, O	*Tyrannus caudifasciatus*	Loggerhead Kingbird	Pitirre Guatíbere
O	*Tachycineta bicolor*	Tree Swallow	Golondrina de Arboles
C, R, O	*Polioptila caerulea*	Blue-gray Gnatcatcher	Rabuita
C, R, O	*Turdus plumbeus*	Red-legged Thrush	Zorzal Real
C, R, O	*Dumetella carolinensis*	Gray Catbird	Zorzal Gato
C, R, O	*Vireo gundlachii*	Cuban Vireo	Juan Chiví
C, R, O	*Parula americana*	Northern Parula	Bijirita Chica
C, R, O	*Dendroica magnolia*	Magnolia Warbler	Bijirita Magnolia
C, R, O	*Dendroica caerulescens*	Black-throated Blue Warbler	Bijirita Azul de Garganta Negra
O	*Dendroica virens*	Black-throated Green Warbler	Bijirita de Garganta Negra
O	*Dendroica pinus*	Pine Warbler	Bijirita de Pinos
O	*Dendroica discolor*	Prairie Warbler	Bijirita
C, R, O	*Dendroica palmarum*	Palm Warbler	Bijirita Común
C, R, O	*Mniotilta varia*	Black-and-white Warbler	Bijirita Trepadora
C, R, O	*Setophaga ruticilla*	American Redstart	Candelita
C, O	*Helmitheros vermivorus*	Worm-eating Warbler	Bijirita Gusanera
C, R, O	*Seiurus aurocapillus*	Ovenbird	Señorita del Monte
C, R, O	*Seiurus noveboracensis*	Northern Waterthrush	Señorita del Manglar
C, R, O	*Seiurus motacilla*	Louisiana Waterthrush	Señorita de Río
C	*Oporornis formosus*	Kentucky Warbler	Bijirita de Kentucky
C, R, O	*Geothlypis trichas*	Common Yellowthroat	Caretica
C, R, O	*Teretistris fernandinae*	Yellow-headed Warbler	Chillina
C	*Wilsonia citrina*	Hooded Warbler	Monjita

Appendix 1 *(continued)*
Scientific, English, and Cuban-Spanish names of all bird species recorded at Los Sábalos, 12–20 January 1988 (C = captured; R = recorded in circular plots; O = observed at random near mist-nets)

Code	Scientific name	English name	Cuban-Spanish name
C, R, O	*Melopyrrha nigra*	Cuban Bullfinch	Negrito
C, R, O	*Tiaris canora*	Cuban Grassquit	Tomeguín del Pinar
C, R, O	*Tiaris olivacea*	Yellow-faced Grassquit	Tomeguín de la Tierra
R, O	*Dives atroviolacea*	Cuban Blackbird	Totí
O	*Quiscalus niger*	Greater Antillean Grackle	Chichinguaco
C, R, O	*Icterus dominicensis*	Black-cowled Oriole	Solibio

Note: Total of 65 species; 38 species mist-netted; 49 species observed in fixed-radius counts; 58 species observed at random.
[a] American Ornithologists' Union 1983.
[b] Garrido and García Montaña 1975.